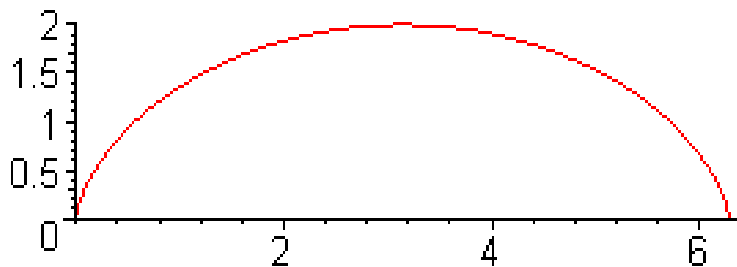


Príklad 8.3 Vypočítajme dĺžku krivky $x = t - \sin t$, $y = 1 - \cos t$, $t \in \langle 0, 2\pi \rangle$.

Riešenie. Pre výpočet dĺžky krivky



použijeme vzťah.

$$s = \int_{\alpha}^{\beta} \sqrt{x'^2 + y'^2} dt =$$

$$\begin{aligned} &= \int_0^{2\pi} \sqrt{(1 - \cos t)^2 + (\sin t)^2} dt = \int_0^{2\pi} \sqrt{1 - 2\cos t + (\cos t)^2 + (\sin t)^2} dt = \\ &= \int_0^{2\pi} \sqrt{2(1 - \cos t)} dt = \int_0^{2\pi} \sqrt{2 \cdot 2\left(\sin \frac{t}{2}\right)^2} dt = 2 \int_0^{2\pi} \sin \frac{t}{2} dt = 2 \left[-2 \cos \frac{t}{2} \right]_0^{2\pi} = \\ &= 4(1 + 1) = 8. \end{aligned}$$